

549,687

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date  
30 September 2004 (30.09.2004)

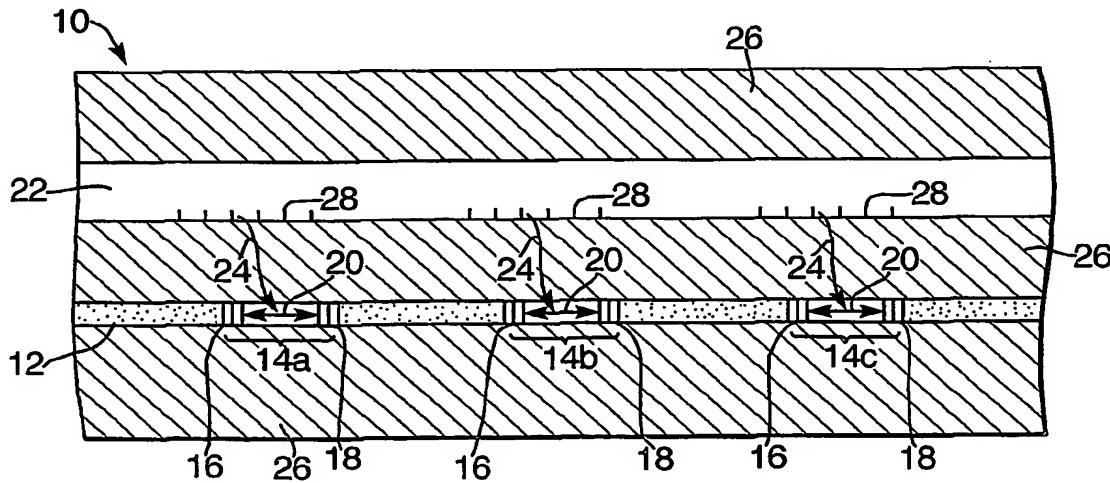
PCT

(10) International Publication Number  
**WO 2004/084365 A2**

- (51) International Patent Classification<sup>7</sup>: **H01S 3/067**
- (21) International Application Number:  
**PCT/GB2004/001034**
- (22) International Filing Date: 11 March 2004 (11.03.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
0306137.1 18 March 2003 (18.03.2003) GB
- (71) Applicant (for all designated States except US): **QINETIQ LIMITED [GB/GB]**; Registered Office, 85 Buckingham Gate, London SW1E 6PD (GB).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **HODDER, Benjamin [GB/GB]**; Qinetiq Limited, Winfrith Technology Centre, Winfrith Newburgh, Bldg A22/163, Dorchester, Dorset, DT2 8XJ (GB). **HILL, David, John [GB/GB]**; Qinetiq Limited, Winfrith Technology Centre, Winfrith
- (74) Agent: **BOWDERY, A., O.**; QinetiQ Limited, Cody Technology Park, A4 Building, Room G016, Ively Road, Farnborough, Hampshire GU14 0LX (GB).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: OPTICAL FIBRE



WO 2004/084365 A2

(57) Abstract: This invention relates to optical fibres, fibre lasers, fibre laser arrays and sensor systems comprising fibre laser arrays. Conventional fibre laser sensor arrangements comprise a plurality of fibre lasers arranged in series along a length of optical fibre. A pump light source is located at one end of the fibre and supplies pump light energy to each of the fibre lasers in turn. Such sensor systems experience a number of disadvantages. Firstly, there is an uneven distribution of pump power along the length of the fibre which effectively limits the number of laser devices that can successfully be incorporated into the optical fibre array. Secondly, the manner in which existing sensor systems are constructed often results in back reflections, optical losses and mechanical weaknesses. The present invention provides a fibre laser which mitigates the above problems with fibre laser sensor arrays.



**Declaration under Rule 4.17:**

— *of inventorship (Rule 4.17(iv)) for US only*

**Published:**

— *without international search report and to be republished upon receipt of that report*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*